

# Cylinder Sensor E2SS

CSM\_E2SS\_DS\_E\_1\_1

## Mounts to Any Type of Cylinder

- One shape of Sensor for all types of cylinders.
- Mounting is simple even in narrow spaces.
- Operating condition is confirmable at a glance.

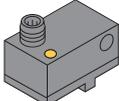


 Refer to *Safety Precautions* on page 4.

For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

## Ordering Information

### Sensors (Dimensions → page 4)

Series	Connection method	Model	
		NPN output	PNP output
Standard Models E2SS-M 	Pre-wired (2 m)	E2SS-MC1 2M	E2SS-MB1 2M
	M12 Pre-wired connector (0.3 m)	E2SS-MC1-M1J 0.3M	E2SS-MB1-M1J 0.3M
Magnetic Field Immune Models E2SS-W 	M12 Connector	E2SS-WC1-P1	E2SS-WB1-P1

## Accessories (Order Separately)

**Mounting Brackets** A Mounting Bracket is not provided with the Sensor and must be ordered separately as required.

Series	Applicable cylinders	Cylinder diameter or groove width	Model
E2SS-M	Round	8 to 25 mm dia.	E2SS-MR1
		25 to 63 mm dia.	E2SS-MR2
	Tie-rod	32 to 40 mm dia.	E2SS-MT1
		50 to 63 mm dia.	E2SS-MT2
		80 to 100 mm dia.	E2SS-MT3
		160 to 200 mm dia.	E2SS-MT4
	T-groove	Not necessary (mounted directly)	
	Dovetail-groove	7 mm	E2SS-MV1
9.4 mm		E2SS-MV2	
11.5 mm		E2SS-MV3	
12.6 mm		E2SS-MV4	
E2SS-W	T-groove or dovetail-groove	-	E2SS-WV1

### Sensor I/O Connectors (M12, Sockets on One Cable End)

(Required for models for Connectors and with Pre-wired Connectors.) A Connector is not provided with the Sensor. Be sure to order a Connector separately. (Dimensions → XS2F)

Appearance	Cable length	Sensor I/O Connector model number	Applicable Proximity Sensor model number
Straight 	2 m	XS2F-D421-DC0-F	E2SS-M□1-M1J E2SS-W□1-P1
	5 m	XS2F-D421-GC0-F	
L-shape 	2 m	XS2F-D422-DC0-F	
	5 m	XS2F-D422-GC0-F	

## Ratings and Specifications

Item	Model	Standard Models E2SS-M Series		Magnetic Field Immune Models * E2SS-W Series	
		E2SS-MC1(-M1J)	E2SS-MB1(-M1J)	E2SS-WC1-P1	E2SS-WB1-P1
Power supply voltage	10 to 30 VDC (including ripple (p-p): 10 %)				
Detection sensitivity (magnetic sensitivity)	2.8 mT max.				
Current consumption	15 mA max.				
Hysteresis	1 mm max.				
Repeat accuracy	±0.1 mm max.				
Pass speed	10 m/s max.			1 m/s max.	
Switching frequency	1 kHz max.			20 Hz max.	
Control output	Switching capacity	150 mA max.		100 mA max.	
	Residual voltage	2 V max. (Load current: 150 mA, Cable length: 2 m)		2 V max. (Load current: 100 mA, Cable length: 2 m)	
Indicator	Operation indicator (yellow)				
Operation mode	NPN open-collector, NO (normally open)	PNP open-collector, NO (normally open)	NPN open-collector, NO (normally open)	PNP open-collector, NO (normally open)	
Protective circuits	Power supply reverse polarity protection, output reverse polarity protection, and load short-circuit protection				
Ambient temperature	Operating/Storage: -25 to 70°C (with no icing or condensation)				
Ambient humidity	Operating/Storage: 35% to 95% (with no condensation)				
Insulation resistance	50 MΩ min. (at 500 VDC) between charged parts and case				
Dielectric strength	500 VAC, 50/60 Hz for 1 min between charged parts and case				
Vibration resistance (endurance)	10 to 55 Hz with 1.0-mm double amplitude for 2 hours each in X, Y, and Z directions				
Shock resistance (endurance)	300 m/s <sup>2</sup> 10 times each in X, Y, and Z directions				
Degree of protection	IEC 60529 IP67				
Connection method	Blank: Pre-wired (standard cable length: 2 m) -M1J: Pre-wired M12 connector (cable length: 0.3 m)			M12 connector	
Weight (when packed)	Pre-wired models: Approx. 35 g Pre-wired M12 connector models: Approx. 30 g			Approx. 25 g	
Materials	Case: PP, Cable: PUR			Case: PA, Connector: PA	
Accessories	Instruction Manual, cable clip (one)			Instruction Manual, mounting screw (one)	

\* These models prevent malfunction in environments in which AC welding is being performed.  
The Sensor will hold the ON or OFF control output condition when subjected to an AC magnetic field of 50 to 60 Hz and 10 to 100 mT.  
When the field subsides, the Sensor returns to normal operation. (Standard models will malfunction under magnetic field noise of approximately 1 mT or higher.)

# I/O Circuit Diagrams

Output configuration	Model	Timing chart	Output circuit	Connector pin arrangement
NPN output	E2SS-MC1(-M1J) E2SS-WC1-P1	<p>Magnet inside of cylinder</p> <p>Non-detection area; Detection area; Non-detection area</p>		<p>M1J:</p> <p>Note: Pin 2 is not used.</p>
PNP output	E2SS-MB1(-M1J) E2SS-WB1-P1	<p>Operation indicator (yellow)</p> <p>Control output</p>		<p>P1:</p>

## Connections for Sensor I/O Connectors

Proximity Sensor		Sensor I/O Connector model number	Connections
Type	Model		
DC 3-wire PNP output	E2SS-MC1-M1J E2SS-WC1-P1	XS2F-D42□-□C0-F 1: Straight 2: L-shape D: 2-m cable G: 5-m cable	
DC 3-wire NPN output	E2SS-MB1-M1J E2SS-WB1-P1		

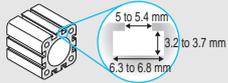
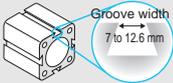
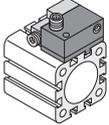
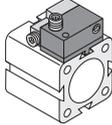
## Applicable Cylinders and Mounting Brackets for E2SS-M Series

Cylinder	Name	Round cylinders	Tie-rod cylinders	T-groove cylinders	Dovetail-groove cylinders
		Appearance	Appearance	Appearance	Appearance
Mounting Bracket	Model	E2SS-MR1	E2SS-MT1	Not necessary (mounted directly)	E2SS-MV1
	Cylinder diameter	8 to 25 mm dia.	32 to 40 mm dia.		E2SS-MV2
	Model	E2SS-MR2	E2SS-MT2		E2SS-MV3
	Cylinder diameter	25 to 63 mm dia.	50 to 63 mm dia.		E2SS-MV4
	Model	-	E2SS-MT3		11.5 mm
Model	-	E2SS-MT4 *1	160 to 200 mm dia.	12.6 mm	
Sensor mounted to cylinder	Appearance				
	Sensor				

\*2. The E2SS-MR□ can be mounted to the tubes of some tie-rod cylinders, depending on the shape of the cylinders.

\*3. When selecting the E2SS-MT□, make sure that the following condition is met for the diameter of tie-rod.  
 E2SS-MT1: 7 mm max. E2SS-MT2: 9 mm max. E2SS-MT3: 11 mm max., and E2SS-MT4: 16 mm max.

# Applicable Cylinders and Mounting Brackets for E2SS-W Series

Cylinder	Name	T-groove cylinders	Dovetail-groove cylinders
	Appearance		
Mounting Bracket	Name	E2SS-WV1	
	Appearance		
Sensor mounted to cylinder			

## Safety Precautions

**WARNING**

This product is not designed or rated for ensuring safety of persons. Do not use it for such purposes.



Never use this product with an AC power supply. Otherwise, explosion may result.

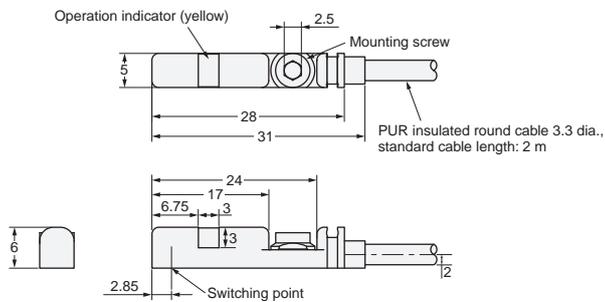


## Dimensions

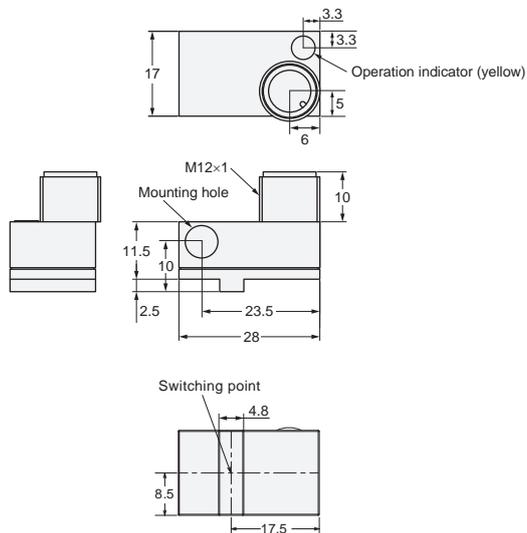
(Unit: mm)

Tolerance class IT16 applies to dimensions in this data sheet unless otherwise specified.

### E2SS-M□1(-M1J)



### E2SS-W□1-P1



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